







## **Belt Conveyor Maintenance**

QP Code: MIN/ISC/Q0904

Version: 1.0

NSQF Level: 3

Skill Council for Mining Sector || Skill Council for Mining, FIMI House, B-311, Okhla Industrial Area, Phase-I New Delhi-110 020

## **Borrowed Qualification Pack (QP) Parameters**

Mining Skill Council of India





Originating SSC	Iron and Steel
Borrowing SSC	Mining
Borrowing Request Validity	01/12/2020 to 31/03/2021
Assessment and Certification to be conducted by	Mining
Certification Logos to be included	Mining





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## MIN/ISC/Q0904: Belt Conveyor Maintenance

## Brief Job Description

The job is all about maintenance of the conveyor system including belts, idlers, motors, interlocking of belts, bunkers and control systems

## **Personal Attributes**

This job requires the individual to work independently as well as in teams. He should be physically fit, not having colour blindness, having analytical skills, problem solving attitude, high concentration levels and willingness to work in a factory environment.

## **Applicable National Occupational Standards (NOS)**

#### **Compulsory NOS:**

- 1. ISC/N0008: Use basic health and safety practices at the workplace
- 2. ISC/N0009: Work effectively with others
- 3. ISC/N0922: Understands the assigned job of belt conveyor maintenance
- 4. ISC/N0923: Prepares for belt conveyor maintenance operation
- 5. ISC/N0924: Carries out the assigned job of belt conveyor maintenance operation
- 6. ISC/N0925: Activities specific to Belt conveyor maintenance

## **Qualification Pack (QP) Parameters**

Sector	Mining
Sub-Sector	
Occupation	Mechanical Maintenance
Country	India
NSQF Level	3
Aligned to NCO/ISCO/ISIC Code	NCO-2004/NIL
Minimum Educational Qualification & Experience	10th Class with 0-6 Months of experience in similar function OR 10th Class with 5-10 Years of experience In lieu of minimum qualification the candidate should have 7-8 years of relevant work experience under an experienced supervisor





Minimum Level of Education for Training in School	8th Class
Pre-Requisite License or Training	2 weeks hands on training (mandatory) Machining, welding, gas cutting, assembling Working knowledge of tools & fixtures 5S and safety practices Working at heights, confined spaces & high temperatures
Minimum Job Entry Age	18 Years
Last Reviewed On	NA
Next Review Date	31/03/2021
NSQC Approval Date	
Version	1.0





## ISC/N0008: Use basic health and safety practices at the workplace

## Description

This OS unit is about knowledge and practices relating to health, safety and security that candidates need to use in the workplace. It covers responsibilities towards self, others, assets and the environment. It includes understanding of risks and hazards in the workplace, along with common techniques to minimize risk, deal with accidents, emergencies, etc

#### Scope

This unit/task covers the following:

- Health and safety procedures
- Fire safety procedures
- Emergencies, rescue and first aid procedures
- Prepare the fabrication/ machining equipment
- Identify tools and moulds required for fabrication
- Prepare material required during fabrication of components
- Ensuring housekeeping and safety on the shop-floor

## **Elements and Performance Criteria**

#### Health and safety

To be competent, the user/individual on the job must be able to:

**PC1.** Use protective clothing/equipment for specific tasks and work conditionsProtective clothing includes: Leather or asbestos gloves Flame proof aprons Flame proof overalls buttoned to neck Cuff less (without folds) trousers Reinforced footwear Helmets/hard hats Cap and shoulder covers Ear defenders/plugs Safety boots Knee pads Particle masks Glasses/gloves/visorsEquipment includes: Hand shields Machine guards Residual current devices Shields Dust sheets Respirator

#### Health and safetyprocedures

To be competent, the user/individual on the job must be able to:

- **PC2.** State the name and location of people responsible for health and safety in the workplaceVarious areas are listed below: On chemical containers Equipment Packages Inside buildings Open areas and public spaces, etc.
- PC3. State the names and location of documents that refer to health and safety in the workplace
- **PC4.** Identify job-site hazardous work and state possible causes of risk or accident in the workplaceHazards include: Working with electrical and thermal tools and equipment Sharp edged and heavy tools Heated metals Oxyfuel and gas cylinders Welding radiation Surfaces: sharp, slippery, uneven, chipped, broken, etc. Substances: chemicals, gas, oxy-fuel, fumes, dust, etc. Physical: working at heights, large and heavy objects and machines, sharpand piercing objects, tolls and machines, intense light, load noise,obstructions in corridors, by doors, blind turns, noise, over stackedshelves and packages, etc. Electrical: power supply and points, loose and naked cables and wires,electrical machines and appliances, etc.

## **Qualification Pack**





- **PC5.** Carry out safe working practices while dealing with hazards to ensure the safety of self and others state methods of accident prevention in the work environment of the job roleSafe working practices include: Using protective clothing and equipment Putting up and reading safety signs Handle tools in the correct manner and store and maintain them properly Keep work area clear of clutter, spillage and unsafe object lying casually While working with electricity take all electrical precautions like insulatedclothing, adequate equipment insulation, use of control equipment, drywork area, switch off the power supply when not required, etc. Safe lifting and carrying practices Use equipment that is working properly and is well maintained Take due measures for safety while working in confined places, trenchesor at heights, etc. Including safety harness, fall arrestors, etc.Methods are: Training in health and safety procedures Using health and safety procedures Use of equipment and working practices (such as safe carryingprocedures) Safety notices, advice Instruction from colleagues and supervisors
- PC6. State location of general health and safety equipment in the workplace
- **PC7.** Inspect for faults, set up and safely use steps and ladders in general useFaults : Corrosion of metal components Deterioration Splits and cracks timber components Imbalance Loose rungs Nuts or bolts, etc.Set up: Firm/level base Clip/lash down Leaning at the correct angle, etc.
- PC8. Work safely in and around trenches, elevated places and confined areas
- PC9. Lift heavy objects safely using correct procedures
- **PC10.** Apply good housekeeping practices at all times. Good housekeeping practices: Clean/tidy work areas Removal/disposal of waste products Protect surfaces
- **PC11.** Identify common hazard signs displayed in various areas
- PC12. Retrieve and/or point out documents that refer to health and safety in the workplace

#### Fire safety procedures

To be competent, the user/individual on the job must be able to:

- **PC13.** Use the various appropriate fire extinguishers on different types of firescorrectly.Fire extinguishers: Sand Water Foam Co2 Dry powderFires: Class A: Ordinary solid combustibles, e.g. wood, paper, cloth, plastic, charcoal etc. Class B: Flammable liquids and gases, e.g. gasoline, propane, diesel fuel, tar, cooking oil and similar substances Class C: Electrical equipment e.g. appliances, wiring, breaker panels etc. (these categories of fires become Class A, B, and D fires when theelectrical equipment that initiated the fire is no longer receivingelectricity) Class D: Combustible metals such as magnesium, titanium, and sodium(these fires burn at extremely high temperatures and require specialsuppression agents)Causes of fires: Heating of metal Spontaneous ignition Sparking, Electrical heating Loose fires (e.g. Smoking, welding, etc.) Chemical fires, etc.
- PC14. Demonstrate rescue techniques applied during fire hazard
- PC15. Demonstrate good housekeeping in order to prevent fire hazards
- PC16. Demonstrate the correct use of a fire extinguisher

#### Emergencies, rescue and first-aid procedures

- To be competent, the user/individual on the job must be able to:
- PC17. Demonstrate how to free a person from electrocution
- **PC18.** Administer appropriate first aid to victims as required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc.
- **PC19.** Demonstrate basic techniques of bandaging

## **Qualification Pack**





- PC20. Respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments. few General health and safety equipment are mentioned below : Fire extinguishers First aid equipment Safety instruments and clothing Safety installations, e.g. Fire exits, exhaust fans etc.
- **PC21.** Perform and organize loss minimization or rescue activity during an accident in real or simulated environments
- **PC22.** Administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases
- PC23. Demonstrate the artificial respiration and the CPR Process
- **PC24.** Participate in emergency procedures. Emergency procedures are: Raising alarm Safe/efficient evacuation Correct means of escape Correct assembly point Roll call Correct return to work
- **PC25.** Complete a written accident/incident report or dictate a report to another person, and send report to person responsible Incident Report should capture: Name Date/time of incident Date/time of report, Location Environment conditions Persons involved Sequence of events Injuries sustained Damage sustained Actions taken Witnesses Supervisor/manager notifiedDocuments: Fire notices Accident reports Safety instructions for equipment and procedures Company notices and documents Legal documents (e.g. Government notices)Job titles:ISC/N0008: Use basic health and safety practices at the workplace Health and safety officer First aid officer Fire officer
- **PC26.** Demonstrate correct method to move injured people and others during an emergency

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- **KU1.** State the names (and job titles if applicable), and describe where to find, all the people responsible for health and safety in a workplace
- KU2. State the names and location of documents that refer to health and safety in the workplace
- **KU3.** Meaning of hazards and risks
- **KU4.** Health and safety hazards commonly present in the work environment and related precautions
- **KU5.** Possible causes of risk, hazard or accident in the workplace and why risk and/or accidents are possible
- KU6. Activities and causes of risk and accident
- KU7. Methods of accident prevention
- KU8. Safe working practices when working with tools and machines
- **KU9.** Safe working practices while working at various hazardous sites
- **KU10.** Where to find all the general health and safety equipment in the workplace
- **KU11.** Various dangers associated with the use of electrical equipment
- **KU12.** Preventative and remedial actions to be taken in the case of exposure to toxic materials. Exposure: ingested, contact with skin, inhaled Preventative action: ventilation, masks, protective clothing/equipment Remedial action: immediate first aid, report to supervisor Materials: solvents, flux, lead
- KU13. Importance of using protective clothing/equipment while working
- **KU14.** Precautionary activities to prevent the fire accidentActivities and causes: Physical actions Reading Listening to and giving instructions Inattention Sickness and incapacity (e.g. Drunkenness) Health hazards (e.g. Untreated injuries and contagious illness)





- KU15. Various causes of fire
- KU16. Techniques of using the different fire extinguishers
- KU17. Different methods of extinguishing fire
- KU18. Rescue techniques applied during a fire hazard
- KU19. Various types of safety signs and what they mean
- **KU20.** Appropriate basic first aid treatment relevant to the condition e.g. Shock, electrical shock, bleeding, breaks to bones, minor burns, resuscitation, poisoning, eye injuries
- KU21. Content of written accident report
- KU22. Potential injuries and ill health associated with incorrect manual handing
- KU23. Safe lifting and carrying practices
- KU24. Personal safety, health and dignity issues relating to the movement of a person by others
- KU25. Potential impact to a person who is moved incorrectly

## **Generic Skills (GS)**

User/individual on the job needs to know how to:

- GS1. Read and comprehend basic content to read labels, charts, signages
- GS2. Read and comprehend basic English to read manuals of operations
- GS3. Read and write an accident/incident report in local language or English
- GS4. Question co-workers appropriately in order to clarify instructions and other issues
- **GS5.** Give clear instructions to co-workers, subordinates others
- **GS6.** Make appropriate decisions pertaining to the concerned area of work with respect to intended work objective, span of authority, responsibility, laid down procedure and guidelines
- **GS7.** Plan and organize their own work schedule, work area, tools, equipment and materials to maintain decorum and for improved productivity
- GS8. Remain congenial while discussing and debating issues with co-workers
- **GS9.** Follow appropriate protocols for communication based on situation, hierarchy, organizational culture and practice
- **GS10.** Ask for, provide and receive required assistance where possible to ensure achievement of work related objectives
- **GS11.** Thank co-workers for any assistance received
- **GS12.** Offer appropriate respect based on mutuality and respect for fellow workmanship and authority
- **GS13.** Think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)
- GS14. Identify immediate or temporary solutions to resolve delays
- **GS15.** Identify sources of support that can be availed of for problem solving for various kind of problems
- **GS16.** Report problems that you cannot resolve to appropriate authority
- GS17. Identify cause and effect relations in their area of work
- **GS18.** Use cause and effect relations to anticipate potential problems and their solution





## **Assessment Criteria**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Health and safety	5	5	-	-
<b>PC1.</b> Use protective clothing/equipment for specific tasks and work conditionsProtective clothing includes: Leather or asbestos gloves Flame proof aprons Flame proof overalls buttoned to neck Cuff less (without folds) trousers Reinforced footwear Helmets/hard hats Cap and shoulder covers Ear defenders/plugs Safety boots Knee pads Particle masks Glasses/gloves/visorsEquipment includes: Hand shields Machine guards Residual current devices Shields Dust sheets Respirator	5	5	-	-
Health and safetyprocedures	15	40	-	-
<b>PC2.</b> State the name and location of people responsible for health and safety in the workplaceVarious areas are listed below: On chemical containers Equipment Packages Inside buildings Open areas and public spaces, etc.	-	4	_	-
<b>PC3.</b> State the names and location of documents that refer to health and safety in the workplace	-	1	-	-
<b>PC4.</b> Identify job-site hazardous work and state possible causes of risk or accident in the workplaceHazards include: Working with electrical and thermal tools and equipment Sharp edged and heavy tools Heated metals Oxyfuel and gas cylinders Welding radiation Surfaces: sharp, slippery, uneven, chipped, broken, etc. Substances: chemicals, gas, oxy-fuel, fumes, dust, etc. Physical: working at heights, large and heavy objects and machines, sharpand piercing objects, tolls and machines, intense light, load noise, obstructions in corridors, by doors, blind turns, noise, over stackedshelves and packages, etc. Electrical: power supply and points, loose and naked cables and wires, electrical machines and appliances, etc.	5	5	_	-





Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC5.</b> Carry out safe working practices while dealing with hazards to ensure the safety of self and others state methods of accident prevention in the work environment of the job roleSafe working practices include: Using protective clothing and equipment Putting up and reading safety signs Handle tools in the correct manner and store and maintain them properly Keep work area clear of clutter, spillage and unsafe object lying casually While working with electricity take all electrical precautions like insulatedclothing, adequate equipment insulation, use of control equipment, drywork area, switch off the power supply when not required, etc. Safe lifting and carrying practices Use equipment that is working properly and is well maintained Take due measures for safety while working in confined places, trenchesor at heights, etc. Including safety harness, fall arrestors, etc.Methods are: Training in health and safety procedures Using health and safety procedures Use of equipment and working practices (such as safe carryingprocedures) Safety notices, advice Instruction from colleagues and supervisors	5	5	-	-
<b>PC6.</b> State location of general health and safety equipment in the workplace	-	5	-	-
<b>PC7.</b> Inspect for faults, set up and safely use steps and ladders in general useFaults : Corrosion of metal components Deterioration Splits and cracks timber components Imbalance Loose rungs Nuts or bolts, etc.Set up: Firm/level base Clip/lash down Leaning at the correct angle, etc.	-	5	-	-
<b>PC8.</b> Work safely in and around trenches, elevated places and confined areas	-	4	-	-
PC9. Lift heavy objects safely using correct procedures	-	4	-	-
<b>PC10.</b> Apply good housekeeping practices at all times. Good housekeeping practices: Clean/tidy work areas Removal/disposal of waste products Protect surfaces	-	1	_	-
<b>PC11.</b> Identify common hazard signs displayed in various areas	5	1	-	-
<b>PC12.</b> Retrieve and/or point out documents that refer to health and safety in the workplace	-	5	-	-
Fire safety procedures	10	15	-	-





Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> Use the various appropriate fire extinguishers on different types of firescorrectly.Fire extinguishers: Sand Water Foam Co2 Dry powderFires: Class A: Ordinary solid combustibles, e.g. wood, paper, cloth, plastic,charcoal etc. Class B: Flammable liquids and gases, e.g. gasoline, propane, diesel fuel,tar, cooking oil and similar substances Class C: Electrical equipment e.g. appliances, wiring, breaker panels etc.(these categories of fires become Class A, B, and D fires when theelectrical equipment that initiated the fire is no longer receivingelectricity) Class D: Combustible metals such as magnesium, titanium, and sodium(these fires burn at extremely high temperatures and require specialsuppression agents)Causes of fires: Heating of metal Spontaneous ignition Sparking, Electrical heating Loose fires (e.g. Smoking, welding, etc.) Chemical fires, etc.	5	5	-	-
<b>PC14.</b> Demonstrate rescue techniques applied during fire hazard	5	5	_	-
<b>PC15.</b> Demonstrate good housekeeping in order to prevent fire hazards	-	1	-	-
<b>PC16.</b> Demonstrate the correct use of a fire extinguisher	-	4	-	-
Emergencies, rescue and first-aid procedures	15	45	-	-
<b>PC17.</b> Demonstrate how to free a person from electrocution	-	5	-	-
<b>PC18.</b> Administer appropriate first aid to victims as required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc.	5	5	_	-
PC19. Demonstrate basic techniques of bandaging	-	5	-	-
<b>PC20.</b> Respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments. few General health and safety equipment are mentioned below : Fire extinguishers First aid equipment Safety instruments and clothing Safety installations, e.g. Fire exits, exhaust fans etc.	5	5	-	-
<b>PC21.</b> Perform and organize loss minimization or rescue activity during an accident in real or simulated environments	-	5	-	-





Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC22.</b> Administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases	-	5	-	-
<b>PC23.</b> Demonstrate the artificial respiration and the CPR Process	-	5	-	-
<b>PC24.</b> Participate in emergency procedures. Emergency procedures are: Raising alarm Safe/efficient evacuation Correct means of escape Correct assembly point Roll call Correct return to work	-	4	-	-
<b>PC25.</b> Complete a written accident/incident report or dictate a report to another person, and send report to person responsible Incident Report should capture: Name Date/time of incident Date/time of report, Location Environment conditions Persons involved Sequence of events Injuries sustained Damage sustained Actions taken Witnesses Supervisor/manager notifiedDocuments: Fire notices Accident reports Safety instructions for equipment and procedures Company notices and documents Legal documents (e.g. Government notices)Job titles:ISC/N0008: Use basic health and safety practices at the workplace Health and safety officer First aid officer Fire officer	5	5	-	-
<b>PC26.</b> Demonstrate correct method to move injured people and others during an emergency	-	1	-	-
NOS Total	45	105	-	-





## National Occupational Standards (NOS) Parameters

NOS Code	ISC/N0008
NOS Name	Use basic health and safety practices at the workplace
Sector	Iron and Steel
Sub-Sector	Steel, Sponge Iron, Ferro Alloys, Re-Rollers, Refractory
Occupation	Mechanical Maintenance
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	25/03/2015
Next Review Date	01/04/2017
NSQC Clearance Date	18/06/2014





## **ISC/N0009: Work effectively with others**

## Description

This unit covers basic etiquette and competencies that a candidate is required to possess and demonstrate in their behaviour and interactions with others at the workplace

## Scope

This unit/task covers the following:

- Ensure appropriate communication with superiors, peers and others as applicable at work place
- Demonstrate appropriate behaviour and etiquette at work place

#### **Elements and Performance Criteria**

#### Ensure appropriate communication with superiors, peers and others as applicable at work place

To be competent, the user/individual on the job must be able to:

- **PC1.** Accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required
- **PC2.** Accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt
- **PC3.** Provide information to others clearly, at a pace and in a manner that helps them to understand

#### Demonstrate appropriate behaviour and etiquette at work place

To be competent, the user/individual on the job must be able to:

- **PC4.** Display helpful behaviour by assisting others in performing tasks in a positive manner, where required and possible
- PC5. Consult with and assist others to maximize effectiveness and efficiency incarrying out tasks
- PC6. Display appropriate communication etiquette while working
- PC7. Display active listening skills while interacting with others at work
- **PC8.** Use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism
- **PC9.** Demonstrate responsible and disciplined behaviours at the workplace
- PC10. Escalate grievances and problems to

#### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- **KU1.** Legislation, standards, policies, and procedures followed in the company relevant to own employment and performance conditions
- KU2. Reporting structure, inter-dependent functions, lines and procedures in the work area
- KU3. Relevant people and their responsibilities within the work area
- **KU4.** Escalation matrix and procedures for reporting work and employment related issues
- **KU5.** Various categories of people that one is required to communicate and co ordinate with in the organization

## SCMS Skill Council For Mining Sector



- KU6. Importance of effective communication in the workplace
- KU7. Importance of teamwork in organizational and individual success
- **KU8.** Various components of effective communication
- KU9. Key elements of active listening
- KU10. Value and importance of active listening and assertive communication
- KU11. Barriers to effective communication
- **KU12.** Importance of tone and pitch in effective communication
- **KU13.** Importance of avoiding casual expletives and unpleasant terms while communicating professional circles
- **KU14.** How poor communication practices can disturb people, environment and cause problems for the employee, the employer and the customer
- **KU15.** Importance of ethics for professional success
- **KU16.** Importance of discipline for professional success
- **KU17.** What constitutes disciplined behaviour for a working professional
- **KU18.** Common reasons for interpersonal conflict
- KU19. Importance of developing effective working relationships for professional success
- KU20. Expressing and addressing grievances appropriately and effectively
- **KU21.** Importance and ways of managing interpersonal conflict effectively

## **Generic Skills (GS)**

User/individual on the job needs to know how to:

- **GS1.** Read and comprehend basic content to read labels, charts, signages
- GS2. Read and comprehend basic English to read manuals of operations
- GS3. Read and write an accident/incident report in local language or English
- GS4. Question co-workers appropriately in order to clarify instructions and other issues
- GS5. Provide clear instructions to co-workers, subordinates others
- **GS6.** Make appropriate decisions pertaining to the concerned area of work with respect to intended work objective, span of authority, responsibility, laid down
- **GS7.** Plan and organize their own work schedule, work area, tools, equipment and materials to maintain decorum and for improved productivity
- **GS8.** Remain congenial while discussing and debating issues with co-workers
- **GS9.** Follow appropriate protocols for communication based on situation, hierarchy, organizational culture and practice
- **GS10.** Ask for, provide and receive required assistance where possible to ensure achievement of work related objectives
- **GS11.** Thank co-workers for any assistance received
- **GS12.** Offer appropriate respect based on mutuality and respect for fellow workmanship and authority
- **GS13.** Think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)
- GS14. Identify immediate or temporary solutions to resolve delays
- **GS15.** Identify sources of support that can be availed of for problem solving for various kind of problems





- **GS16.** Identify sources of support that can be availed of for problem solving for various kind of problems
- **GS17.** Report problems that you cannot resolve to appropriate authority
- **GS18.** Identify cause and effect relations in their area of work
- **GS19.** Use cause and effect relations to anticipate potential problems and their solution





## **Assessment Criteria**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Ensure appropriate communication with superiors, peers and others as applicable at work place	10	20	-	-
<b>PC1.</b> Accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required	5	5	-	-
<b>PC2.</b> Accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt	5	5	-	-
<b>PC3.</b> Provide information to others clearly, at a pace and in a manner that helps them to understand	-	10	-	-
Demonstrate appropriate behaviour and etiquette at work place	20	50	-	-
<b>PC4.</b> Display helpful behaviour by assisting others in performing tasks in a positive manner, where required and possible	5	5	-	-
<b>PC5.</b> Consult with and assist others to maximize effectiveness and efficiency incarrying out tasks	5	5	-	-
<b>PC6.</b> Display appropriate communication etiquette while working	-	10	-	-
<b>PC7.</b> Display active listening skills while interacting with others at work	-	10	-	-
<b>PC8.</b> Use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism	5	5	-	-
<b>PC9.</b> Demonstrate responsible and disciplined behaviours at the workplace	5	10	-	-
PC10. Escalate grievances and problems to	-	5	-	-
NOS Total	30	70	-	-





## National Occupational Standards (NOS) Parameters

NOS Code	ISC/N0009
NOS Name	Work effectively with others
Sector	Iron and Steel
Sub-Sector	Steel, Sponge Iron, Ferro Alloys, Re-Rollers, Refractory
Occupation	Mechanical Maintenance
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	30/12/2014
Next Review Date	01/04/2017
NSQC Clearance Date	18/06/2015





## ISC/N0922: Understands the assigned job of belt conveyor maintenance

## Description

This unit is about understanding the requirements of the job after receiving the checklist from the supervisor, seek any clarifications on the requirements of the job and identify the tools and tackles that would be needed to carry out the job

## **Elements and Performance Criteria**

Understand the assigned job in accordance with the instructions / checklist

To be competent, the user/individual on the job must be able to:

- PC1. interpret the checklist and understand the job requirements
- **PC2.** plan, as appropriate to carry out the job

Understand the engineering drawings

To be competent, the user/individual on the job must be able to:

- PC3. understand sections, views, scale of measurement used in the drawing
- PC4. understand the symbols used in the drawings
- **PC5.** understand other specifications and identify the sequence of activities required to assemble the machine
- **PC6.** read and interpret engineering drawings to ensure correct limits, tolerance and fits of equipment components

#### Seek clarifications with respect to the equipment, drawings, if any

To be competent, the user/individual on the job must be able to:

- PC7. identify any clarifications that he/she wants to seek with respect to the given drawing
- PC8. recognize whom to contact for clarifications on the engineering design
- PC9. escalate the concern to the supervisor or shift-in-charge, if needed

Identify the tools and tackles that are required to carry out the assigned job

To be competent, the user/individual on the job must be able to:

- PC10. identify tools, tackles & equipment required to perform the operation
- PC11. ask helper to carry tools required to the desired work site
- PC12. report to stores / supervisor in case of non-availability of tools & tackles or stock-out

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. quality and damage checks to be done and importance of the same
- KU2. risk and impact of not following defined procedures/work instructions
- KU3. escalation matrix for reporting identified issues
- KU4. engineering drawings and tool drawings
- KU5. knowledge of tools & tackles to be used for the job
- KU6. understanding of normal running characteristics of relevant equipment
- KU7. implications of not adhering to sequence of activities and operations





## **Generic Skills (GS)**

User/individual on the job needs to know how to:

- **GS1.** construct simple sentences and express ideas clearly through written communication
- **GS2.** fill up appropriate technical forms, process charts, activity logs in required format of the company
- GS3. read and interpret engineering and machine drawings
- **GS4.** read and understand manuals, health and safety instructions, memos, reports, job cards, etc.
- **GS5.** express statements, opinions or information clearly so that others can hear and understand
- GS6. respond appropriately to queries
- GS7. communicate with supervisor
- **GS8.** communicate with team members
- **GS9.** diagnose common problems in the tools based on visual inspection, sound, temperature etc.
- **GS10.** suggest improvements(if any) in maintenance processes based on experience





## **Assessment Criteria**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Understand the assigned job in accordance with the instructions / checklist</i>	10	30	-	-
<b>PC1.</b> interpret the checklist and understand the job requirements	5	15	-	-
PC2. plan, as appropriate to carry out the job	5	15	-	-
Understand the engineering drawings	40	80	-	-
<b>PC3.</b> understand sections, views, scale of measurement used in the drawing	10	20	-	-
<b>PC4.</b> understand the symbols used in the drawings	10	20	-	-
<b>PC5.</b> understand other specifications and identify the sequence of activities required to assemble the machine	10	20	-	-
<b>PC6.</b> read and interpret engineering drawings to ensure correct limits, tolerance and fits of equipment components	10	20	-	-
Seek clarifications with respect to the equipment, drawings, if any	20	50	-	-
<b>PC7.</b> identify any clarifications that he/she wants to seek with respect to the given drawing	5	20	-	-
<b>PC8.</b> recognize whom to contact for clarifications on the engineering design	5	15	-	-
<b>PC9.</b> escalate the concern to the supervisor or shift-in-charge, if needed	10	15	-	-
Identify the tools and tackles that are required to carry out the assigned job	20	50	-	-
<b>PC10.</b> identify tools, tackles & equipment required to perform the operation	10	20	_	_
<b>PC11.</b> ask helper to carry tools required to the desired work site	5	15	-	-
<b>PC12.</b> report to stores / supervisor in case of non-availability of tools & tackles or stock-out	5	15	-	-





Assessment Criteria for Outcomes	Theory	Practical	Project	Viva
	Marks	Marks	Marks	Marks
NOS Total	90	210	-	-





## National Occupational Standards (NOS) Parameters

NOS Code	ISC/N0922
NOS Name	Understands the assigned job of belt conveyor maintenance
Sector	Iron and Steel
Sub-Sector	Steel, Sponge Iron, Ferro Alloys, Re-Rollers, Refractory
Occupation	Mechanical Maintenance
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	30/12/2014
Next Review Date	01/04/2017
NSQC Clearance Date	18/06/2015





## ISC/N0923: Prepares for belt conveyor maintenance operation

## Description

This unit is about inspecting the equipment for scheduled maintenance or defects and preparing the equipment for carrying out the operation

## Scope

This unit/task covers the following:

- Reach the site and inspect the equipment for scheduled maintenance or defects and identify cause of problem
- Prepare spares, material required for operation

## **Elements and Performance Criteria**

Reach the site and inspect the equipment for scheduled maintenance or defects and identify cause of problem

To be competent, the user/individual on the job must be able to:

- PC1. reach the site with desired tools, tackles and equipment
- PC2. identify the root cause of the problem, if any

Prepare spares, material required for operation

To be competent, the user/individual on the job must be able to:

- PC3. prepare the list of spares required for completion of job and receive them
- PC4. ensure that tools match the desired specifications
- **PC5.** ensure tools and equipment required for assembly are free from physical damage and ready for operation
- PC6. report damaged / defective components of equipment as per the escalation matrix

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. quality and damage checks to be done and importance of the same
- KU2. risk and impact of not following defined procedures/work instructions
- KU3. escalation matrix for reporting identified issues
- KU4. plant layout and location of various departments
- KU5. understand normal running characteristics of relevant equipment
- **KU6.** possible causes of common problems during assembly & their remedies
- KU7. knowledge of tools and tackles required for the operation
- KU8. standard specifications of spare parts

#### **Generic Skills (GS)**

User/individual on the job needs to know how to:





- **GS1.** construct simple sentences and express ideas clearly through written communication
- **GS2.** fill up appropriate technical forms, process charts, activity logs in required format of the company
- **GS3.** read and understand manuals, health and safety instructions, memos, reports, job cards, etc.
- **GS4.** express statements, opinions or information clearly so that others can hear and understand
- **GS5.** respond appropriately to queries
- **GS6.** communicate with supervisor, team members, other departments e.g. stores, operations, etc.
- **GS7.** diagnose common problems in the tools based on visual inspection, sound, temperature etc.
- GS8. suggest improvements(if any) in maintenance processes based on experience





## **Assessment Criteria**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Reach the site and inspect the equipment for scheduled maintenance or defects and identify cause of problem	10	25	-	-
<b>PC1.</b> reach the site with desired tools, tackles and equipment	5	10	-	-
<b>PC2.</b> identify the root cause of the problem, if any	5	15	-	-
Prepare spares, material required for operation	20	45	-	-
<b>PC3.</b> prepare the list of spares required for completion of job and receive them	5	10	-	-
<b>PC4.</b> ensure that tools match the desired specifications	5	15	-	-
<b>PC5.</b> ensure tools and equipment required for assembly are free from physical damage and ready for operation	5	10	-	-
<b>PC6.</b> report damaged / defective components of equipment as per the escalation matrix	5	10	-	-
NOS Total	30	70	-	-





## National Occupational Standards (NOS) Parameters

NOS Code	ISC/N0923
NOS Name	Prepares for belt conveyor maintenance operation
Sector	Iron and Steel
Sub-Sector	Steel, Sponge Iron, Ferro Alloys, Re-Rollers, Refractory
Occupation	Mechanical Maintenance
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	30/12/2014
Next Review Date	01/04/2017
NSQC Clearance Date	18/06/2015





# ISC/N0924: Carries out the assigned job of belt conveyor maintenance operation

## Description

This NOS is about carrying out the operations in terms of rectifying the identified problem or carrying out scheduled maintenance

## Scope

This unit/task covers the following:

- Conduct routine maintenance or rectify the problem, as appropriate
- Conduct tests to ensure fitness
- Communicate to supervisor about completion of work

## **Elements and Performance Criteria**

#### Conduct routine maintenance or rectify the problem, as appropriate

To be competent, the user/individual on the job must be able to:

- **PC1.** dismantle the equipment, as needed
- PC2. correct the defect in the part or replace the defective part
- PC3. assemble the parts according to the drawings, as required
- **PC4.** fasten mechanical components/ subassemblies together using screws, bolts, and collars using hand/ power tools
- **PC5.** set and adjust linkages, tensions and clearances of assembled components to specifications using fixed gauges and hand tools
- PC6. re-assemble the parts post correcting the defect

#### Conduct tests to ensure fitness

To be competent, the user/individual on the job must be able to:

- **PC7.** ensure alignment of parts and with the engineering drawings
- PC8. check vibrations to ensure they are within desired limits
- PC9. test the machine to ensure it is fit to use before handover
- PC10. record the test results in the prescribed format of the organization

#### Communicate to supervisor about completion of work

To be competent, the user/individual on the job must be able to:

- **PC11.** ensure all activities are complete according to checklist
- **PC12.** communicate to supervisor on completion of given job in case of any deviations from checklist

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. quality and damage checks to be done and importance of the same
- **KU2.** contact person across departments for spare parts, information etc.





- KU3. escalation matrix for reporting identified issues
- KU4. risk and impact of not following defined procedures/work instructions
- **KU5.** assembling techniques such as aligning, bending, fixing, mechanical jointing, threaded jointing, sealing, light fitting
- KU6. steps required to assemble/ dismantle an equipment with a given design
- KU7. checks that need to be made to ensure that equipment is safe and ready to use
- KU8. limits, fits and tolerances of the equipment
- KU9. possible causes of common problems during assembly & their remedies
- KU10. units of measurement
- **KU11.** response to emergencies e.g. power failures ,fire and system failures
- **KU12.** use of measuring instruments e.g.- vernier, micro meter, dial gauge, filler gauge, torque wrench etc.
- KU13. compilation of test results in prescribed format

## **Generic Skills (GS)**

User/individual on the job needs to know how to:

- GS1. construct simple sentences and express ideas clearly through written communication
- **GS2.** fill up appropriate technical forms, process charts, activity logs in required format of the company
- GS3. read and interpret engineering and machine drawings
- **GS4.** read and understand manuals, health and safety instructions, memos, reports, job cards, etc.
- GS5. express statements, opinions or information clearly so that others can hear and understand
- **GS6.** respond appropriately to queries
- **GS7.** communicate with supervisor, team members, other departments e.g. stores, operations, etc.
- **GS8.** diagnose common problems in the tools based on visual inspection, sound, temperature etc.
- GS9. suggest improvements(if any) in maintenance processes based on experience





## **Assessment Criteria**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Conduct routine maintenance or rectify the problem, as appropriate</i>	30	105	-	-
PC1. dismantle the equipment, as needed	5	20	-	-
<b>PC2.</b> correct the defect in the part or replace the defective part	5	20	-	-
<b>PC3.</b> assemble the parts according to the drawings, as required	5	20	-	-
<b>PC4.</b> fasten mechanical components/ subassemblies together using screws, bolts, and collars using hand/ power tools	5	15	-	-
<b>PC5.</b> set and adjust linkages, tensions and clearances of assembled components to specifications using fixed gauges and hand tools	5	15	-	-
<b>PC6.</b> re-assemble the parts post correcting the defect	5	15	-	-
Conduct tests to ensure fitness	25	60	-	-
<b>PC7.</b> ensure alignment of parts and with the engineering drawings	5	15	-	-
<b>PC8.</b> check vibrations to ensure they are within desired limits	5	20	-	-
<b>PC9.</b> test the machine to ensure it is fit to use before handover	10	15	-	-
<b>PC10.</b> record the test results in the prescribed format of the organization	5	10	-	-
Communicate to supervisor about completion of work	10	20	-	-
<b>PC11.</b> ensure all activities are complete according to checklist	5	10	-	-
<b>PC12.</b> communicate to supervisor on completion of given job in case of any deviations from checklist	5	10	-	-
NOS Total	65	185	-	-





## National Occupational Standards (NOS) Parameters

NOS Code	ISC/N0924
NOS Name	Carries out the assigned job of belt conveyor maintenance operation
Sector	Iron and Steel
Sub-Sector	Steel, Sponge Iron, Ferro Alloys, Re-Rollers, Refractory
Occupation	Mechanical Maintenance
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	30/12/2014
Next Review Date	01/04/2017
NSQC Clearance Date	18/06/2015





## ISC/N0925: Activities specific to Belt conveyor maintenance

## Description

This unit is about carrying out the operations that are specific to a belt conveyor maintenance role

## **Elements and Performance Criteria**

## Inspects belt, drums, gallery area, motors, chutes, pulleys, gravity take up pulley, idlers, gear box, stands etc. prior to starting work

To be competent, the user/individual on the job must be able to:

- PC1. understand the conveyor system and working principle
- **PC2.** inspect belt, drums, gallery area, motors, chutes, pulleys, gravity take up pulley, idlers, gear box, stands etc. prior to starting work
- PC3. detect any defects in the functioning of any assemblies
- **PC4.** rectify any defects in the assemblies/sub-assemblies of the conveyor system and carry out belt train operation
- PC5. carry out trial of the equipment to ensure fitness and check alignment of machine
- PC6. report to the supervisor in case of any problem that has to be escalated

#### Perform various types of jointing

To be competent, the user/individual on the job must be able to:

- **PC7.** understand various techniques of joint preparation e.g. mechanical (fastening) and vulcanizing (cold and hot)
- **PC8.** perform the jointing activity, as required
- **PC9.** understand the process of belt changing (holding the belt, replacing the damage belt, cold & hot vulcanising, belt tensioning etc.)

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- **KU1.** quality and damage checks to be done and importance of the same
- **KU2.** risk and impact of not following defined procedures/work instructions
- KU3. escalation matrix for reporting identified issues
- **KU4.** types of documentation in organization and importance of the same
- KU5. knowledge of conveyor belt repair practices and belt changing
- **KU6.** understand sequencing and interlocking of the conveyor system
- KU7. working knowledge of physical behaviour / properties of materials being handled
- KU8. limits, fits and tolerances
- **KU9.** troubleshooting of belt conveyor system

## **Generic Skills (GS)**

User/individual on the job needs to know how to:

GS1. construct simple sentences and express ideas clearly through written communication





- **GS2.** fill up appropriate technical forms, process charts, activity logs in required format of the company
- **GS3.** read and interpret engineering and machine drawings
- **GS4.** read and understand manuals, health and safety instructions, memos, reports, job cards, etc.
- **GS5.** express statements, opinions or information clearly so that others can hear and understand
- **GS6.** respond appropriately to queries
- **GS7.** communicate with supervisor
- **GS8.** communicate with team members
- **GS9.** identify how different parts will fit together to prepare the equipment
- **GS10.** suggest improvements(if any) in maintenance processes based on experience





## **Assessment Criteria**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Inspects belt, drums, gallery area, motors, chutes,pulleys,gravity take up pulley, idlers, gear box, stands etc. prior to starting work</i>	15	45	-	-
<b>PC1.</b> understand the conveyor system and working principle	5	10	-	-
<b>PC2.</b> inspect belt, drums, gallery area, motors, chutes, pulleys, gravity take up pulley, idlers, gear box, stands etc. prior to starting work	5	5	_	-
<b>PC3.</b> detect any defects in the functioning of any assemblies	-	10	-	-
<b>PC4.</b> rectify any defects in the assemblies/sub- assemblies of the conveyor system and carry out belt train operation	-	10	-	-
<b>PC5.</b> carry out trial of the equipment to ensure fitness and check alignment of machine	5	5	-	-
<b>PC6.</b> report to the supervisor in case of any problem that has to be escalated	-	5	-	-
Perform various types of jointing	5	35	-	-
<b>PC7.</b> understand various techniques of joint preparation e.g. mechanical (fastening) and vulcanizing (cold and hot)	5	10	-	-
PC8. perform the jointing activity, as required	-	10	-	-
<b>PC9.</b> understand the process of belt changing (holding the belt, replacing the damage belt, cold & hot vulcanising, belt tensioning etc.)	-	15	_	-
NOS Total	20	80	-	-





## National Occupational Standards (NOS) Parameters

NOS Code	ISC/N0925
NOS Name	Activities specific to Belt conveyor maintenance
Sector	Iron and Steel
Sub-Sector	Steel, Sponge Iron, Ferro Alloys, Re-Rollers, Refractory
Occupation	Mechanical Maintenance
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	30/12/2014
Next Review Date	01/04/2017
NSQC Clearance Date	18/06/2015





## Assessment Guidelines and Assessment Weightage

## **Assessment Guidelines**

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Element/ Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each Element/ PC.

2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.

3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.

4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).

5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.

6. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.

7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

#### Minimum Aggregate Passing % at QP Level : 50

(**Please note**: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

## **Assessment Weightage**

**Compulsory NOS** 

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ISC/N0008.Use basic health and safety practices at the workplace	45	105	-	-	150	15
ISC/N0009.Work effectively with others	30	70	-	-	100	10
ISC/N0922.Understands the assigned job of belt conveyor maintenance	90	210	-	-	300	30



## **Qualification Pack**



National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ISC/N0923.Prepares for belt conveyor maintenance operation	30	70	-	-	100	10
ISC/N0924.Carries out the assigned job of belt conveyor maintenance operation	65	185	-	-	250	25
ISC/N0925.Activities specific to Belt conveyor maintenance	20	80	-	-	100	10
Total	280	720	-	-	1000	100





## Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
5S	Technique of maintaining orderliness –Japanese terminology.
СР	Control Plan.
WI	Work Instructions.



## Glossary



Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.
Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.





Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.